THE EDUCATIONIST.

VOL. II. INDIANAPOLIS, NOVEMBER, 1874. No. 8.

THE EDUCATIONIST.

A. C. SHORTRIDGE, } EDITORS.
GEO. P. BROWN, }

TILFORD'S BUILDING, South East Corner of Meridian and Circle Streets.
Indianapolis Printing and Publishing House.

TERMS:

Per annum, in advance.....$1 00
Single Copies.....10

THE EDUCATIONIST will be issued on the 15th of each month. Contributions and advertisements should reach us by the first day of the month of publication.
Address all letters to the Editors.

Editorial.

PURDUE UNIVERSITY is in successful operation. It opened with a much larger number of students than was anticipated, and the various departments are rapidly getting down to systematic and thorough work. Purdue is one of the best endowed institutions in the State. What with the donations received and the proceeds from the sale of lands, it is worth $650,000.

It has at present an annual income of more than $20,000 for tuition purposes.

MR. CHAUNCEY ROSE, of Terre Haute, has set apart $100,000 from his large fortune, as a fund, the interest of which is to be applied for the support and education of girls at the State Normal School.

He also proposes to give $10,000, if the State will give a like sum, for the erection of a boarding house for girls.

This is something very much needed at the Normal, and the proposition should meet a favorable response from the next Legislature.

J. W. SCHERMERHORN & Co., of New York, have just issued volume I of the "American Educational Annual." The book contains 291 pages and is designed as a reference book to all matters pertaining to education. For the reason that most of this class of books heretofore published have been utter failures, we began an examination of this one with some misgivings; to our surprise, however, we found it quite unlike most if not all that have preceded it. In short, it is an admirable volume, embracing a thousand items of interest to school officers and teachers, and should be in the libraries of all our more prominent educational workers. In the school statistics of Indianapolis we notice one or two mistakes; the showing for the school-year ending June 20, 1874, should be as follows: population of the city 80,000; number of persons of school age 19,284, number of different pupils in the Public Schools 9,351.

WE call the attention of our readers to the programme arranged for the next State Teachers' Association. Mr. Butler has been very active and faithful in the discharge of the onerous duties devolving upon the chairman of the Executive Committee. It is a position demanding more hard work and more brains than any other in the association, and there is generally a very feeble appreciation of the labor performed by this officer. He is expected to keep the machinery so oiled and so nicely adjusted that it will run without friction or jar. He is responsible for everything; if a railroad will not return teachers free, it is the chairman's fault; if there is any failure to present a paper because the assignee does not put in an appearance, the chairman ought to have foreseen it and provided something else. When things move smoothly and lovely he is forgotten, and he is only remembered to be blamed for the occurance of that which he has probably made every effort in his power to prevent. Our bowels of compassion yearn for the unlucky wight who is so unfortunate as to have the greatness of this chairmanship thrust upon him. "We have been there," and we know whereof we affirm.

Now, what shall be said of him or her who has been induced to consent to prepare and present an exercise and then fails to do it? Were we the chairman of the Executive Committee we should say that he ought to be impaled. As it is, we say that he ought to be ashamed of himself.

STATE NORMAL SCHOOL.

It is universally admitted by those who are well informed in such matters, that the Indiana State Normal School, in both theory and practice, is as nearly the realization of the true idea of a school for teachers, as any other in the country. It is very gratifying to know that this fact is so fully appreciated as it is, and that so many of our teachers are availing themselves of the opportunities here afforded for a thorough preparation for their work. It is a noticeable characteristic of all those who have attended long enough to become thoroughly imbued with the spirit of this institution, that they have high and noble aims, broad and comprehensive ideas, and a clear understanding of the duties and responsibilities of the teacher. It is

impossible to estimate the value of the influence which this school has exerted, directly and indirectly, upon the teachers of this State. It has been a direct source of inspiration to many, who in turn have imparted something of their spirit to others. We can name many schools, and some of them too in the first rank, that are working upon a much higher plane than they did two, three and four years ago, because of the influence of the State Normal. This is beginning to be understood, but it is yet far from being fully appreciated.

But the State has not done for the school as much as the school has done for the State. A large and expensive building was erected, and was left but partially completed. No provision was made for apparatus, library or cabinet, or even for the proper heating of the building, to say nothing of the care of the grounds surrounding the building.

The visitor sees a palace, so far as external appearance is concerned, located in the midst of a barren waste of two acres of land, crossed by gullies worn by the water, and surrounded by an apology for a board fence that is blown down by every wind. Inside the building, he finds on the third floor a mere shell, with no suitable protection from wind and rain.

Now we appeal to our legislators and to the friends of public schools throughout the State to "lend a hand" in righting this wrong. The students can not be properly accommodated for want of room; therefore the building should be completed. The health of teachers and students is constantly injured by the imperfect facilities for heating; therefore they should be changed. Proper esthetic culture of the students is impeded largely by the unkempt condition of buildings and grounds; therefore they should be put in good order, and should be kept so. Students are prevented from acquiring that accurate knowledge desirable in teachers, for want of suitable library, apparatus and cabinet; therefore they should be supplied. What more need be said?

THE OLDEST POET.

On Tuesday, November 3, William Cullen Bryant completed his eightieth year.

America's greatest poet adds another to the brief list of those who far exceeding the "three-score and ten" retain in unimpaired vigor the faculties of mind and body. With the weight of four-score years resting lightly upon him he retains the soul of youth and continues to find hearty enjoyment in the glad things life offers.

The poet was born at Cummington, Hampshire Co., Mass., Nov. 3, 1794.

His poetical ability evinced itself when he was but nine years of age, and four years later he was known as the author of a political satire in verse entitled "*The Embargo*," a production indicating political talent of a high order which has developed with his advancement in life.

Thanatopsis, perhaps his best poem, was written in his eighteenth year, since which time his contributions to American poetry have been frequent and have deservedly given him the name of "America's greatest poet."

Nearly all his life he has been connected with the press; for nearly half a century with the *Evening Post*, which has steadily advanced with him until it holds a leading position among the journals of the day.

Among his latest gifts to the literary world are the translations of the *Iliad* and *Odyssey* an invaluable work, deserving and receiving the praise of the highest literary authorities.

Among the pleasant incidents in commemoration of his birthday, was the presentation of a letter with innumerable signatures congratulating the poet on his vigor of body and mind, and expressing the intention of embodying in a commemorative vase of original design and choice workmanship the lessons of his literary and civic career in its relations to our country; the work to be first exhibited in the National Centennial Exhibition and then to become a permanent treasure of the Metropolitan Museum of Art The first thought suggested by a notice of this intended gift is a wish, the natural one, that his long life may be extended to meet the dawn of that centennial gala day, which day will be thereby honored by his presence, as his country so long has been and will be by his fame.

Selections.

DRAWING IN PUBLIC SCHOOLS.

THE DISCIPLINE IT SHOULD AFFORD—ITS RELATION TO OTHER STUDIES.

BY C. B. STETSON.

Drawing now asks for a conspicuous place in the public schools, not simply to be tolerated; it asks for recognition as one of the most essential factors in the education of every man and every woman. Therefore, it must answer, and answer in the affirmative, if its claims are to be allowed, the two questions which should be put to whatever makes a similar demand:

1. Will this study discipline the faculties?
2. Can what it teaches be directly applied to useful ends?

The first question is usually first propounded, because in the discipline of the faculties all are like blessed. Discipline is a universal good; not a thing simply of special, or professional utility. It would be difficult, nay impossible, to mention any kind of labor, even the rudest hand labor, that can not be better performed with a disciplined mind to direct. Hence the emphasis which educators justly lay upon discipline.

But it is not enough that a given study will discipline the faculties; to entitle it to a place in the public schools it must teach things that can be applied to useful ends. In a word, the study must be both disciplinary and direct useful. The usefulness, however,

must not be limited to a few persons; it must have a wide, if not a universal range. The learning of things which can be of direct use to only a few, should certainly not be made binding upon all. To each of these questions, Drawing says yes, with emphasis. In different ways, some of them peculiar to itself, it affords, when rationally taught, an admirable discipline; while in one form or another it is directly useful to almost every person. For large numbers it is even indispensable. This paper will consider only the first question—discipline.

But before this can be done, what is meant by drawing must be, in some way, defined. The term, like mathematics, embraces several things, quite, though not wholly different from one another. As the study of mathematics is much more than the study of arithmetic, so the study of drawing is much more than the reproduction of flat copies.

This paper will speak of drawing as illustrated by the system prepared by Prof. Walter Smith for use in the public schools of this country. It is the only American system of drawing which claims to be as comprehensive as the best in Europe, which claims to cover the whole ground for both industrial and purely artistic purposes. As this system is being so generally adopted, and as all future instruction in drawing in the public schools of this country will doubtless closely conform to the main features of this system, no matter whose books may be used, it is well to take it as a definition of drawing.

But as the discipline to be got from any study depends very largely upon the manner of teaching, so it is not enough to take only the subject matter covered by Prof. Smith's system of drawing; his method must also be followed, otherwise the discipline which drawing should give, will not be secured. Sometimes we see a teacher, who, by his method, obtains a better discipline for his pupils from the four fundamental rules of arithmetic, than another obtains from teaching all that belongs to arithmetic. Method has a similar influence in drawing. Let it be remembered, then, by the reader that the discipline and other things here claimed for drawing, can be fully claimed for only one American system, that of Prof. Smith. All others are too deficient in scope, and too monotonous and dogmatic in method.

It will now be well to illustrate the general statement which has been made by an enumeration of particulars.

1. Drawing refines the taste by developing the power of discriminating between that which is beautiful and that which is not. It does this in two ways—through the eye and through the mind. By drawing from beautiful copies and beautiful models and objects, the act of looking intently at these beautiful forms gradually, but surely, refines the taste. Indeed, without such beautiful forms for the learner to draw, the taste can not be educated. But there must be something more; the laws of beauty must be explained; the learner must be taught why this pleases and why that does not. Although impossible to tell what beauty is, in the last analysis, yet many of its laws can be readily defined. Indeed, they can be so illustrated that even children can be taught, by observance of these laws, to avoid whatever is in grossly bad taste, though they are not equal to their nicer applications. Thus, through seeing and thinking the taste is educated by drawing.

And this taste is a thing of the utmost worth because of its benign influence upon every one who does, because of the delight it affords the possessor, and because of its unlimited commercial value. Refined taste does not necessarily demand costly qualification, since it enables one to enjoy a beautiful object made of cheap material, as of clay; while an unrefined, barbaric taste would demand that the object be made of costly material, as of gold, the art counting for naught. This discipline of taste can be given by no other common school study.

2. It is evident that drawing must develop the perceptive faculties in a high degree, since the first condition of success is the ability to see and to comprehend what is seen. Mere blank gazing is not enough; there must be comprehension, since every line has a meaning of its own, or it should never be drawn. No one questions the value of disciplining the perceptive faculties, and probably no other study will discipline them better than drawing.

3. Perhaps all educators would agree that instruction in language should be conceded the first place in public schools. Hence, whatever tends to make one accurate in the use of language, must, for that reason, be regarded as a thing of value. Now, drawing affords an admirable training in the precise use of words, and in the extraction of the meaning from the printed page. He who has learned how to use a book rightly, possesses in that one thing alone a good education.

But how does drawing train in language? 1. It employs many terms, derived in a large part from geometry, all of which are susceptible of ocular illustration, and so can be made easy of comprehension. The technical meaning of these terms is usually clear cut; but they often have a loose, popular meaning, which the pupil must learn clearly to distingush from the technical. This trains him in verbal criticism. From the outmost, great emphasis must be laid upon a clear knowledge of terms, otherwise there can be neither an intelligent beginning nor intelligent progress afterwards. Drawing is far from being a mere matter of dexterity in the use of the pencil. 2. The dictation exercises compel the pupil to give the utmost heed to spoken words, since he is required to make an instantaneous interpretation of the words into lines. There is no escape from this. 3. Lastly, when the learner comes to draw with instruments, if he is then required, as he should be in the main, to execute his drawings by following the printed directions, he must inevitably acquire an excellent discipline in the interpretation of printed language, for he can not take the first step without understanding what the printed words mean.

There is no opportunity for the verbal memory to serve him as in nearly everything else. If he does just what the printed directions tell him to do, he will get his drawing right; but if he is heedless, if he goes to work before he understands what he is directed to do, he will fail. Furthermore, he will require no one to tell him in what he had failed; he can see that himself; and he will have simply to proceed and do his work again, following the printed directions with more care.

There is no study in the public schools to be compared with geometrical drawing, when practiced as here described, for training children to precision in the interpretation of printed language. It is easy to see that such discipline must have an exceedingly favorable influence on all other studies.

4. Drawing from the solid form models and objects, according to free-hand perspective, and mechanical drawing that deals with the three dimensions, both train the pupil to "see in space," as it is technically termed. In the first case, the pupil must learn to make a mental picture of the parts of the solid which can not be seen, giving to each invisible line its proper position and direction, otherwise the visible lines whose positions and directions are dependent upon the lines which are invisible, can not be properly drawn. In the second case, as working-drawing are not pictorial representations of the object to be made, the pupil must learn to form a vivid mental image, by the aid of the arbitrary lines, of the objects required. In either case the imagination, so far as it has to do with form, receives an excellent discipline, which is of great service in many ways. No other common school study affords such training.

5. By giving marked attention, as should be done in the early stages of drawing, to the production of original designs for decorative and constructive purposes, the imagination is developed in a healthy and pleasing manner. The attention is kept constantly on the alert for new and beautiful combinations of lines and forms—not mere chance combinations, but such as are made in accordance with the fixed principles of design. Original design bears the same relation to drawing that original composition bears to the study of language.

6. By producing, without a copy, forms previously drawn, the memory receives important discipline. It acquires the ability to recall not only the particular forms, which should mainly be historical and classic, that it has been exercised upon, but all forms whatever. It will be seen at once that this ability to remember form is a valuable acquisition.

7. Other particulars might be mentioned, but these are enough to show the great disciplinary value of drawing. As one result of this discipline the pupil will more readily master all his other studies. His ability to judge of proportion and to remember form, his skill of hand acquired in free-hand drawing, will enable him to recognize and remember words more readily in reading and spelling, to write with great ease and grace, to perform his exercises in written arithmetic in a more becoming manner, and to draw his geographical maps with increased facility and precision. Finally, that general power, which comes from a judicious and liberalizing breadth of culture, will show itself in the augmented ease with which the pupil will master any practical study. Thus it is safe to say that the disciplinary influence of drawing, when it is properly taught, will save the pupil in his other studies all the time that Prof. Smith asked for, even when his full course is taken—about two hours each week.—*Chicago Teacher.*

THE RELATION OF PHILOSOPHY TO SOCIETY, ART, AND RELIGION.

BY WILLIAM T. HARRIS.

[*Continued from September Number.*]

But while all forms of religion agree in presenting the Divine as negative to the world, there is a vast distinction between the ethnic religions of the Orient and the Christian religion. The principle of incarnation best measures this difference. The avators of Brahmanism are mere adumbrations of the true principle of incarnation. Under all, the absolute remains utter abstract, being negative alike to all forms, whether material or rational. Hence Brahm is non-spiritual and can be reached only by utter annihilation. Scarcely less inadequate is the

PRINCIPLE OF BUDDHISM,

so much lauded in our own time by certain scholars. That the divine should be an immediate presence—the Lama—presents a conception inadequate to the essential idea of spirit, for the individual chosen for the Grand Lama is himself not regarded as intrinsically infinite, but only as temporarily manifesting the infinite to believers. Thus Buddhism lacks the mediation, which is essential to spirit, and hence can not reach a concrete view of immortality, or of the personality of man and God. In Greece, personality was reached in its form of manifestation only. In Rome it was reached in its abstract substance, such as makes the principle of civil law. In Judaism absolute spirit appears as absolute unity, excluding all finitude. Abstract personality, as manifested in Jehovah, becomes concrete in the Christian Trinity and the doctrine of incarnation. In the doctrine of incarnation is contained the complete reconciliation of the finite and infinite. The divine reveals itself in the flesh in order to draw up the finite to union with itself. The finite is receptive of the Divine, and the human will may make itself holy and reconcile itself with God. The true relation of the finite to the infinite is here first comprehended in the history of the world. The Hindoos make nature and the finite a *Maya*, or delusion of the senses. Christianity makes it the mystical mediation of spirit. Nature and the finite, therefore, stand in a less hostile relation to the Divine in the Christian religion than

they do in any other. The primary negative attitude of religion toward nature and the finite is here softened by the development of the principle of the self-negativity of finitude. Since nature or the finite annuls itself, and ceaselessly sends forth its opposite or spirit, it is clear that nature and the finite are at bottom only the reflection of the Divine, and in no wise opposed to it when seized as a whole.

But a deeper principle still meets us in

CHRISTIAN CIVILIZATION.

The distinction between the abstract monotheism of Judaism and the Divine ideal of Christianity lies in the doctrine of the Trinity. The principle of incarnation implies independent existence of what is the same in substance. There is no longer a negation of the finite, its annihilation, as in Brahmanism or Buddhism, but a joyful recognition of it as the principle of resurrection and return to the Divine. There is more joy over the returning prodigal than over the just that went not astray. That which is alien and far removed—evil and lost in its nature—that which is antithesis to the Divine—that even it should receive the spiritual, and, by self-abnegation, become the image or reflection of the Divine, and thereby achieve independent worth and value—this is the practical meaning of the mystery of the Trinity.

Henceforth in the world history the deepest idea is that of the development of dependent elements or individuals into independent reflections of the highest principle. In their independence they are absolutely one. This is the thought of personality. The interpenetration of the various institutions of man by this thought has brought them, one by one, into harmony with the Divine idea of the Christian religion, but at the same time has developed them into outward independence. The growth of freedom in the "eighteen Christian centuries" has arisen solely from a growing comprehension of this principle. Stated in less abstract language, it holds that free, independent conviction is better than blind partisanship or a subordination wherein all opposition is borne down by external force. Reflection and harmony are better than dead unity. Two wills intent on the same thing and independent of each other, reinforce each other more powerfully. The child who obeys implicitly his father, is not at one with him in so deep a sense as the son who comprehends completely his father's designs and purposes, and acts spontaneously in harmony with him. Independent harmony is better than dead identity wherein all difference is annulled. It truly reinforces, while the other does not. Hence, in modern history all the institutions are continually rising into this concrete independence and deeper harmony.

THE CHURCH AND STATE

are separating, civil society is becoming a congeries of totalities, each reflecting the whole system. Even the State, at least in the instance which America furnishes to the world, organizes its three great departments independently, in order thereby to make firm the charter of its freedom. Legislative, judicial and executive, each co-ordinate, reflect the idea of civil freedom adequately; while the subordination of either to the other would render the whole imperfect and inefficient to preserve civil liberty.

Having arrived at this fundamental principle of religion as the ultimate resting place in consciousness of humanity, we emerge upon the domain of philosophy. In civil society the divine principle revealed itself as the harmony of society wherein each individual supplied his own wants and obtained an independent competency only through an unreserved devotion to the interests of society. His object was to make a supply for society. The more devotedly and wisely he toiled for society, the more his efforts were reflected back upon himself from society, and he became opulent. His independence is the independence of society. The social whole contributes to each of its members the independence that is arrived at through division of labor. Through the isolation of employments and the concentration of the skill of the individual upon a narrow speciality, his mechanical dexterity increases so largely that the total productivity of society is increased, not in an arithmetical ratio, but in a geometrical ratio. More than this, the simplification of his mechanical labor through the extreme of division, makes it easy to substitute the forces of nature in the form of machinery, for human bodily labor, and thus to complete the emancipation begun. "The production of the seven and a half millions of human workmen in Great Britain, aided by the labor-saving machinery invented since 1760, equals the production of the

INDUSTRY OF TWO WORLDS

as populous as this, working with such means and appliances as were used in the civilization of the first half of the eighteenth century. The productive power of the world, industrially considered, doubles once in seven years. The amount of permanent improvements which descend from one generation to another, according to Gladstone, has doubled since the year 1800, and will double again, at its present rate of acceleration, before the close of this century. Such a miracle is the operation of the Christian principle of independent reflection when realized in civil society.

In art the principle of harmony has been shown to underlie all its adequate forms. In religion, its revelation has been followed by a progressive unfolding and independent organization of institutions, the family, civil society, and the State, of art and science, and within each of these the same principle, still at work, is unfolding their subordinate phases into the independent systems, each likewise reflecting the whole organism.

The attitude of the scientific consciousness in the presence of all this, let it be our task now to consider. Religion progresses toward unlimited spiritual freedom. It is the truth, however, that makes free, and within the sphere of religion this has two attitudes. The truth to the many assumes the form of the dogma. That which is deepest, and requires the widest syntheses of

thought for its comprehension, is adumbrated in a historical wrappage, or stated as a mystery to be believed directly without further inquiry. In this shape of dogma, however, the ultimate freedom of spirit is not fully realized. It may suffice for the piety of the heart, but it ignores the intellect, and thus divorces the will from the rational conviction. It remains for religion to penetrate the theoretical faculty, and through the *piety of the intellect* reach the profoundest reconciliation possible. This is accomplished in theology as a science. In this phase of religion there is found a reconciliation with science; for although science in its advent and in its lower phases is hostile in form to religion, yet in its highest form of philosophy it arrives at the supreme principle of absolute personality and recognition of independent existence in a harmony already revealed to the world in Christianity. Toward this ultimate and complete reconciliation of the intellect and will of the finite individual with absolute will and reason the tides of the modern world tend inwards. The principle of the Christian religion demands the independent realization of its own doctrine on the part of all other forms of existence as the condition of their free and separate existence. We have seen it in civil society, in the State and in art. It is demanded also in science.

Here at last is the field for combination that makes the most exacting demands upon the human spirit. Science in its very form is independent and negative to the principle of authority. There can be

NO DOGMA IN SCIENCE

as such. Hence the elementary stage of religious consciousness, that of the dogma is utterly incompatible with that of science. Science in its first and feeble stages, moreover, can not grasp the ultimate synthesis of the universe; can not rise to the perception of the divine as underlying the finite, but rests in its progress on partial principles of a higher or lower order, and thus sets itself in direct hostility to religion. This two-fold occasion for hostility between religion and science furnishes the clue to the clearing up process of our own time. The dogmatic form of religion is negative to the form of science, demanding free investigation and withholding the surrender of the intellect to anything that does not demonstrate its own necessity to be the necessity of the inquiring mind. Then, again, all the lower and imperfect stages of science are negative to religion because of their own incompetency to grasp the highest principle of the universe—a principle revealed in a direct or immediate form in religion as the object of faith. Hence, faith and insight, religion and science, assume hostile attitudes toward each other, while underneath all they are in the completest unity possible. The very independence which is the form of science, in all its stages, is the freedom in God which religion places as its highest attainment. Science, though formally free and independent throughout its progress, is not really so until it rises dialectically above such seemingly adequate first principles as matter, force, law, being, essence, cause, and all partial categories, to the comprehension of *personality* as the absolute substance and subject.

Thus at this advanced stage of the evolution of our subject, there yawns an abyss wider and deeper than any before it, between the divine and the human, between the infinite and the finite. The very principle of the Christian religion has impelled civilization toward it. It has demanded continually of the finite spirit a more internal and exhaustive

RECONCILIATION WITH THE DIVINE.

It has not let man rest in simple faith, but has driven him from formal recognition of the divine to a genuine internal *spiritual* recognition of it. "In spirit and in truth shalt thou worship Me" has been the word of God addressed to the seer. From the heights of Thibet, where the Dalar Lama abides, and where every fourth son in every family is consecrated to monastic life, the formality of religion degenerates so much, that praying machines are believed in and used; from this nadir of formality upward to the free recognition of the Divine in its universality, as it can be comprehended only in the free-thinking reason—all the way up to this the spirit of religion has been the impelling power. It is the final cause of the world's history. The manifest way of Providence in the world, then, is to precipitate the conflict of religion and science, and to achieve the deepest and final reconciliation. Those who preach against the form of science, and urge its renunciation for the form of dogmatic faith, however honest and sincere they may be, do they not fight against Providence? If so, they fight hopelessly, and the cause they defend will suffer in its immediate and temperal interests. Only the temporal and finite can suffer, and its suffering is the dialectic of the struggle between its limit and its ideal. If we set ourselves in the way of Providence in human history, we do not delay the consummation of the divine event, but we may reduce our own finite labor to a nullity; those who strive in harmony with providential purposes reap great harvests.

Unless the course of modern history is misread, can one make other of it than the struggle for enlightenment? Already its first epoch is far advanced. The French revolution, so dark in its details, was the beginning of science to throw off authority and assume its proper scientific form. True to its nature it threw off allegiance to all that did not immediately justify its existence. To such abstract and feeble thinking as man is capable of at first, all institutions seem irrational, or as he calls it, "unnatural." It is only after he learns to see by the light of pure thought that he discerns the eternal verities and recognizes their reflection in the institutions of man.

The finite individual can make his thinking activity an image of the infinite, an indwelling presence of the divine reason, by casting off all extraneous authority, and finding in the depths of thought its own

UNIVERSALITY AND NECESSITY.

That it passes through skepticism to reach this is

the necessity of the scientific method. When the individual reaffirms one by one the institutions that he has denied, and sees their reasonableness, he rises like a Phœnix from the ashes of skepticism. He no longer relies on mere authority, and no longer holds aloof from the realized reason of the world. After the period of revolutions arises the period of empirical reconstruction. It is the stage of modern physical science. Psychology and sociology are attentively cultivated, but their results are chiefly employed negatively to hew a pathway for denial of authority. This is the present attitude of scientific investigation. It has discovered what it calls the conservation and correlation of forces. Force is its ultimate first principle, just as matter was a few years ago. Everything in the world shall be explained dynamically. This is certainly a higher form of explanation than that which explains everything statically into material atoms. But when it applies its results to the products of realized reason, and explains how thought is the correlate of the phosphorus consumed in the brain, or that material limitations positively marked out ethical customs, its attitude towards the highest truth is utterly nugatory, Thus, although the stages of infant science are necessary, yet they are dangerous and unfaithful realizations of reason. They lead to the last and highest mediation of spirit—a free insight into the divine and its realization in the world; but the first step is a denial of the divine and its realization altogether! The affirmation of the individval reason as ultimate measure of all things is an utter negation of the universal and absolute reason, until step by step the individval widens his syntheses and gains an insight into the substantial existence of reason as the absolute power, and sees that his own rationality rests upon infinite mediation. His thought at the deepest is his participation in God's thought. Toward this insight into the creative thought all science struggles. Its negative stage of skepticism is essential to its existence, but is the most painful of all alienations.

THE PUNY INDIVIDUAL

at his weakest, because most ignorant stage, cuts loose from the world of realized reason and its institutions, and in his grim loneliness turns to reconstruct a new world—to begin anew the creation from nothing. No wonder that the avatar of science in this world was the most bloody and gloomy one of the world's history!

In the works of Stuart Mill, Herbert Spencer, Comte and Buchner, we have as many phases of the new evangel of physical science. For the great doctrines of personal God, Freedom and Immortality they substitute "social laws," "life of humanity," and an all-embracing, all-persistent force, unconscious itself, and annihilating to human consciousness.

In the negative reaction from this fatalistic standpoint we may expect a return to the study of the antinomies or contradictions of the intellect first so ably pointed out by Immanuel Kant. In fact, the greater part of the "First Principles" of Herbert Spencer traces its origin to a study of Kantianism through the works of Sir William Hamilton, whose own version of Kantian theories was second hand. Most of his so-called first principles are dogmatic statements of theses or antitheses which Kant proved to be one-sided. Frequently Spencer proves some doctrine, as, for example, the persistence of force, by the same argument that he casts aside, on another occasion, as an impotence of the human reason. The human intellect can not conceive spiritual truths, such as self-existence, self-determination, the infinite, because it can form no mental image of them. The infinite can not be imaged, it is true. But when he proves force to be persistent because we can not conceive its annihilation, we ask him how he can form any conception of a force existing through infinite time; for he has told us that this is a sufficient reason for discarding the philosophical doctrine of self-existence. If he insists, however, on his argument in favor of the persistence of force, then the same argument may be applied in favor of self-existence, to-wit: No one can conceive of the annihilation of existence. To these examples may be added the doctrine of causality by Mill as well as by Spencer; the refutation of the

DOCTRINE OF FREE WILL;

the denial of the possibility of self-consciousness.

In detail, one may assume a very hostile attitude toward these thinkers, yet in view of the movement which they represent, he can not withhold his respect for their sincerity and candor. They represent a great elevation over the crudities of the scientific period just preceding them. Read D'Holbach's "Systeme de la Nature" and Spencer's "First Principles" together, and note the immense difference! The Frenchman has too limited spiritual insight to see any defect you may criticise in his assumptions. Spencer and Mill have arrived at a partial consciousness of a great many critical principles. One notable characteristic of their standpoint, and the one wherein the defect of their thinking is most manifest, is their denial of universal and necessary truths. The thinking activity of the brain being correlative to its consumption of food according to their doctrine, there is good reason to hope more and better food will produce deeper and better first principles, although by the hypothesis it can never arrive at universal and necessary ones, which will stand the test of time.

The human intellect completes its phenomonology or voyage from immediate certitude to truth in four stages, according to Plato. The lowest stage, that of mere sense-perception, seizes objects as self-existent, independent realities. To its thinking, idealism is the most absurd theory conceivable. It takes the immediate reality for truth, the certitude of the senses that this object is here and now, is the highest reach of the intellect to it. Could it only perfect the senses and add a few more to those it possesses, truth would be still better attainable. Of any essential activity of thought, it knows nothing. If it attempts to form some notion of mind, it imagines or conceives a mate-

rial extension of some sort. "Where body is not, *nothing* is."

The second stage of the thinking activity discovers that all solid realities in the world change and are changing. Sufficient examination of the world convinces it that all is fluid; that all apparent solid realities are, in truth, forces playing against one another, and in their equilibria producing the phenomena of matter. "All exists in relation," is its dictum. Every particle of the universe depends on every other particle, and therefore nothing exists in itself in the world of time and space. In endeavoring to trace out and comprehend somewhat we seek out its relations. We comprehend that thing best whose relations we have pursued the furthest.

This stage of thinking makes the discovery that the

FACT IS A RELATIVE SYNTHESIS.

That is to say, a fact comprehends or embraces some portion of an event or process. How large a portion is thus synthetized, grasped together, in the fact, is altogether arbitrary—dependent upon the exercise of the five senses plus the activity of the reflective faculty making influences. We know that the fall of an apple is a fact of a very small compass to the swine who run to devour it. But to Isaac Newton, sitting under the tree, the same fact swelled into such large proportions that it included the fall of the moon in its orbit around the earth, and thus became the fact of universal gravitation by which the planets perform their vast revolutions and the comets walk their wandering paths. The smaller the arc of an event that is taken for a fact, the less true is that fact. Those who hold with a convulsive grasp to the sensuous reality, thinking thereby to get nearer to the truth by omitting the activity of *inference* or *reflection*, must take truth to exist in the shape of atomic things, and not to exist in the form of relations. They get very small arcs of the immense orbits of truth. To take in those orbits man must widen his perspective, and, to use an Aristotelian expression, he must *energize*, to free himself from the changing and variable.

A fact in its narrower compass is easily seized; he who runs may read and understand. But the exposition of a fact in its widest relations is a "mere ingenious arrangement of words" to the one in the first stage of thinking, and who consequently can not make combinations, and is not equal to the task of rethinking those wide relations.

ARISTOTLE'S WORKS,

taken as a whole, are an attempt to seize the facts of the world in their entirety—each fact in its entirety. And he finds that the entirety of each fact—each fact grasped in all its conditioning relations—is the entirety of all facts; in short, that the ultimate fact is one, and that namely: what Plato calls the *self moved one*, or, as it is better named by Aristotle—pure knowing or self-thinking. Now, it happens that the hundreds who read Aristotle, seize readily the many particular facts there treated of, and never mistrust their ability to grasp all that is found in the book; but still they miss the universal fact which Aristotle had undertaken to explicate, and which in fact was the sole object he had in view in writing any one of his numerous treatises.

Such men, in stepping from one phase of a fact to another phase lying quite close to it, are very dexterous; but, in stepping from the central fact to its ultimate verge, they find themselves utterly powerless. For this reason, and no other, they will tell you with the utmost assurance that these wide relations do not exist. They innocently suppose that what is not for them is not for any one else, or that it does not exist if they are unable to see it; and they do not well consider that their difficulty consists in the attempt to follow with mincing steps the mighty strides of Olympian thinkers who have gone before them.

But nothing is so deep or vast in its synthesis as not to yield to the faithful persistence of the earnest thinker, let him be ever so puny in stature when he begins.

The third stage of the culture of thought begins to perceive the

DIALECTIC OR NEGATIVE MOVEMENT

in thought, and the syntheses which we name categories, and which stand for the departments of the world at large. Its negative stage is a process of undermining the established results of mere dogmatic thinking. But the completed dialectic carries one back to the synthetic totality of thought and being.

The third stage of thought, therefore, deals with universal and necessary truths, and discovers their genesis and unity. The dialogues of Plato are chiefly conversant with this dialectic movement. By its means to burn up the sophistry of the lower stages of thought is the object of Plato.

The dialectic movement, traced out to its ultimate result, leads to the *self-moved*, or the self-existent, whose energy is the activity of self-comprehension—a thought which one may recognize at once to be the thought of absolute reason, which is the first principle of theology.

On the basis of the highest principles, as self-recognition or absolute personality, one may now make a science of the world, and firmly seating himself on the result of the Platonic dialectic, Aristotle proceeded to map out the sciences and institutions in such an exhaustive manner that 2,000 years of growth of civilization have not added very much in the way of new directions to those marked out by him. Aristotelian philosophy furnished the thoughts with which the

GREAT FATHERS OF THE CHURCH,

Greek and Latin, as well as the scholastics, Origen, Gregory, Justin Martyr, Augustine, Roscellinus, Anselm, Abelard, Thomas Aquinas, Duns Scotus and others, elaborated this Christian theology.

It is the highest privilege that humanity enjoys, that each individual, however humble he may be, is heir to all the world of realized reason that has come down to us. There are history and institutions, art, religion and philosophy. Each man inherits all the culture of the race, for it is combined and transmitted from gen-

eration to generation as the patrimony into which each may enter who will prove his title by the labor of possessing it. The golden road to the most secure possession of these treasures of realized reason, lies through the study of the profoundest thinkers of the race. This is the one royal road to learning: Learn first to think and to make with readiness those immense syntheses with which the great masters of thought have made revolutions. Aristotle is the brightest name in the ancient world, and the highest thinking of modern philosophy reaffirms his thought just as civilization has confirmed it for two thousand years. Let the one who seeks clearness resort to Plato and Aristotle at once, or what is better, take the road to them through

KANT AND HEGEL,

Leibnitz, Descartes, Spinoza, Proclus and Plotinus, Fichtl and Schelling. These are some of the giant thinkers who possessed genuine insight into the world of nature and of spirit.

But above all, let no one think to get what is called insight in one week's reading of a profound thinker. If one reads once per week some profound writer, spending his hour or two over a single page, and then lays by his book to take it up again a week later and to recur again and again to the same book, he will find after a year that he begins to see the difference between the daylight of insight which illumines all things and the smoky torch light of the understanding which throws an uncertain glare over things lying near it, and obscures more remote things by its smoke.

Out of the world of philosophy—from the systems of Plato, Aristotle and Hegel, he can invade the province of art and read the great poems of Homer, Dante, Shakespeare and Goethe. He can study the wonderful conceptions of Michael Angelo, Raphael, Beethoven, Phidias and Praxiteles. If one concentrates his attention on the best things, he will not be disappointed in his growth. As one can not study the deep masters at all hours, he finds plenty of time to devote to lesser lights.

One remembers with sorrow the small impulse given at any of our colleges and universities in the land toward the thorough study of the greatest thinkers. But out of the present

FERMENT IN NATURAL SCIENCE

will come eventually larger and larger syntheses, and the speculative thinking will yet become a popular pursuit from the side of the scientific intellect.

At its best moments the school of modern physical science has reached, in its study and interpretation of philosophy, only the standpoint of a Lewes, who sits down quietly to write the biography of philosophy—its life (if it had any) being—according to him—now happily extinct, inasmuch as the advent of positive science has made an end to the era of philosophic investigation.

What treatment do the great thinkers upon the problem of life receive at his hand? The Biography of Philosophy, by Mr. Lewes, is a sort of old-clothes shop, wherein are arranged, on a series of pegs, the worn-out garments of thought. According to him, each philosopher produced only some *opinions*, curious and ingenious, perhaps, and occasionally intimating faintly some glimpse of a truth now verified by physical science. Did not some of them possess insight you ask, and, would not a study of them even now assist us in comprehending the problem of life? Mr. Lewes don't know what is meant by the word "insight," and as for any study of the great thinkers, he replies that it is well enough as a scientific investigation, a department of history, or archæology, or, perhaps, of ethnology, but for light on the pathway of life, the history of philosophy only serves as a scare-crow to frighten away ambitious and aspiring young men. "Go not this way." "All speculation is a circular movement of adoption and rejection of mere opinions." "There is no universal and necessary truth—but the best we can reach is mere empirical generalization." "Each philosopher sets up his theory—a mere opinion—and tries to refute the systems of his predecessors—himself, alas! to meet the same treatment from the next one after him." "The feet of those who are to carry thee out are already at the door," is the text addressed to each new system of philosophy by the oracle of positivism.

But all this self-assured sitting in judgment over the intellectual lights of the race, loses its charming complacency as soon as a little earnest study into the systems of thought exposes the fact that there is fundamental agreement among them all, and only superficial difference arising from exposition.

When one comes to see, after longer study, that these systems of philosophy not only contain expositions of the same deep principle—that of self-determination—but they contain in the form addressed to the intellect the same content that is addressed to the heart in religion, or to the sense perception in art, and above all this the same content that is wrought into institutions of civilization through which even our positivists live and move, and have their being—then one realizes fully the substantiality of truth, and knows once for all that what he has seen to be universal and necessary in the abstract regions of pure thought, is also the logical condition of all that exists—of the world of nature, with its mechanics, physics and organics—still more especially of the world of spirit—the institutions of civilization, for the reason that they manifest in a more adequate form the Divine Reason. In this cosmic view of the world, through thought, one learns to see the absolute exhaustiveness with which human history is epitomized in the words, "God made man in his own image."

ERRATA.—Page 88, column first, fourth line from the bottom, for *singular* read *secular*. Page 88, second column, nineteenth line from the top, for *indifference* read *in difference*. Page 78, second column, twelfth line from the bottom, after *self* insert "to loss of self." Page 88, second column, eighth line from bottom, for *eternal* read *external*.

THE world would be more happy if persons gave more time to an intercourse of friendship.

EDUCATION.

The latest "circular of information" issued by the Bureau of Education at Washington, (No. 2, of 1874) presents a great variety of important facts and suggestions concerning the subject of drawing in Public Schools and the present relation of Art to education in the United States. The pamphlet, which has been prepared by Mr. I. E. Clarke, of the Bureau, is one of the most valuable of the series. It contains an account of the methods adopted by Massachusetts in introducing the study of drawing into the Public Schools and providing technical training for older persons; an enumeration of the institutions of the United States which afford training in industrial, technical, and high art; and a statement of some of the considerations in favor of the general diffusion of a knowledge of drawing, together with a brief sketch of the experience of other countries in this matter. There is hardly any direction in which our systems of popular education stand in greater need of improvement than this. A mere knowledge of the rudiments is no longer sufficient to give our industrial classes an equal chance in their competition with the skilled labor of other countries, and it is quite time for us to understand the causes and the extent of inferiority. Education has an appreciable money value. The better the education the higher its value, and the leading nations of Europe are now acting upon the idea that those commodities stand highest in the markets of the world in the production of which educated skill is most largely employed. Great Britain, France, Germany, and other countries are, accordingly, making special efforts to promote instruction in every branch of industrial art, of which drawing is the necessary basis. The following statements, copied from a recent speech of Mr. Cole, of the South Kensington Museum, shows in a striking way the growth of this branch of instruction in Great Britain in the course of the last twenty years:

"In 1852 there were only twenty art schools, with five thousand students, paying £2,600 in fees. Now there are one hundred and twenty-two schools, with twenty-two thousand eight hundred students, paying £24,800 a year in fees. There was then no teaching in schools for the poor; now one hundred and ninety-four thousand five hundred children are taught drawing. There were then no night classes for artisans; now there are five hundred and thirty-eight classes, with seventeen thousand two hundred students. In 1872 the South Kensington Museum was visited by upwards of one million one hundred and fifty-six thousand persons. Its art library was used by nineteen thousand seven hundred and fifty students and its educational library by fifteen thousand three hundred and sixty persons—clergymen, teachers, and others interested in elementary education—coming from all parts of the country to consult it. The Museum had circulated, without accident, through local exhibitions, upward of five thousand four hundred paintings, objects, diagrams, etc., which were visited by more than six hundred and four thousand persons. It has lent to local schools of art for study upwards of one thousand three hundred objects, and two thousand and one hundred books, prints, etc., relating to fine art.

We have not space to quote other equally interesting statements which this circular contains; but we can cordially commend it to the attention of all who are interested either in education or in the development of our industrial interests, and we suggest as a topic worth thinking about the statement that among civilized nations the United States ranks lowest in all that pertains to the application of art to manufactures. The plain and practical remedy is to insist upon the teaching of elementary drawing in all our Public Schools.—*Independent.*

SPELLING TEST.

We recommend the following test to those who pride themselves on their aptness at spelling:

"The most skillful gauger I ever knew was a maligned cobbler, armed with a poniard, who drove a peddler's wagon, using a mullein-stalk as an instrument of coercion, to tyrannize over his pony shod with calks. He was a Galilean Sadducee, and he had a phthisicky catarrh, diphtheria and the bilious intermittent erysipelas. A certain Sibyl, with the sobriquet of 'Gypsy,' went into ecstacies of cachinnation at seeing him measure a bushel of peas, and separate saccharine tomatoes from a heap of peeled potatoes, without dyeing or singeing the ignitible queue which he wore, or becoming paralyzed with a hemorrhage. Lifting her eyes to the ceiling of the cupola of the capitol to conceal her unparalleled embarrassment, making a rough courtesy, and not harassing him with mystifying, rarefying and stupefying innuendoes, she gave him a couch, a bouquet of lilies, a mignonette and fuchsias, a treatise on mnemonics, a copy of the Apocrypha in hieroglyphics, daguerreotypes of Mendelssohn and Kosciusko, a kaleidoscope, a dram-phial of ipecacuanha, a teaspoonful of naphtha, for deleble purposes, a ferrule, a clarionet, some licorice, a surcingle, a carnelian of symmetrical proportions, a chronometer with a movable balance wheel, a box of dominoes and a catechism. The gauger, who was also a trafficking rectifier and a parishioner of mine, preferring a woolen surtout (his choice was referable to a vacillating, occasionally-occurring idiosyncrasy), wofully uttered this apothegm: 'Life is checkered; but schism, apostasy, heresy and villainy shall be punished.' The Sibyl apologizingly answered: 'There is a ratable and allegeable difference between a conferrable ellipsis and a trisyllabic diæresis.' We replied in trochees, not impugning her suspicion."—*Northern Indiana Teacher.*

THE heaviest brain on record was recently found in the skull of a London bricklayer, who could neither read nor write. Its weight was sixty-seven ounces.

Scientific Items.

Artificial butter is now obtained from the fat of a newly-slaughtered beef, which, it is said, can not be distinguished from the pure country article.

In the ancient lake-basin of Wyoming and Utah, fossil equine remains have been found in great numbers, varying from the size of a fox to nearly that of the present horse.

In 1865 there were in France 4833 school libraries, containing 180,854 volumes; in 1869 the number of libraries was 14,395, and of volumes 1,239,165. At the present time there are 15,622 school libraries and 1,474,637 volumes. Notwithstanding the events of the last few years, the state, province, communes and private individuals have liberally contributed funds for maintaining this important work.

At Mariupal, Russia, a teacher was recently denounced to the entire parish, by the village pope, as unfit to teach children, owing to his "habit of taking walks on the steppe and collecting useless grasses, disgusting insects and every conceivable abomination, and making these things objects of public instruction.' This wicked teacher was also censured for his disuse of the rod, and his aversion to the good old Russian practice of pulling out bunches of hair from the heads of refractory children!

An inventor of Birmingham, England, has perfected a process for filling articles of brass with molten iron. It is simply necessary to immerse the brass shells in water and pour in the iron; the brass can not, of course, attain a higher temperature than 212°, while its contents may be 3000°. Or the shells may be immersed in iron filings, the high conducting power of which is thus turned to account. The process, simple though it be, is, from a commercial point of view, of great importance, as will be readily understood.

Mr. Cottrell, Prof. Tyndall's assistant in his lectures here, has lately succeeded in showing experimentally the reflection of a sound-wave by an air surface. The sound of a bell is made to pass through a tube and strike upon a sensitive flame placed a short distance from the opening. Each stroke of the bell throws the flame into violent agitation. If now an ordinary flat gas flame be placed just in front of and below the outer end of the tube, the sound-wave on reaching this layer of hot air rising from the flame will suffer reflection and the sensitive flame will be scarcely affected. By placing a second tube near the first and at an angle with it and properly adjusting the flame, the sound may be made to pass through it and affect a second sensitive flame placed in front of it. The interest of this experiment lies in the illustration it affords of Mr. Tyndall's position that sound can not travel a non-homogeneous atmosphere.

A short time ago a high wind blew down a great many oranges from the trees in the small town of Collioure, France, and many of them fell in the midst of a vigorous growth of nettles. The laborers who were sent to gather the fruit were surprised to find that the nettles a short time before so active could now be handled without danger. No difference in the structure of the plant was visible under a magnifier.

It is thought that the high wind had exhausted the plant of all the volatile poison. After eight days the nettles were as poisonous as before.

Prof. Lovering, of Harvard, in his recent address before the American Association for the Advancement of Science, has corrected a very common and widespread error concerning the velocity of electricity. Referring to Wheatstone's experiments with the revolving mirror, he says that the anomalous results subsequently obtained by testing this velocity by telegraphic signalling through long lines of wire, both land and submarine, which gave a much lower figure than that of Wheatstone, are a misinterpretation. That electricity moves through a quarter of a mile of wire at the rate of 288,000 miles in a second is not evidence that it would move over 288,000 miles in a second. Electricity has no velocity in the ordinary sense. The transmission of the electrical disturbance is proportional to the square of the disturbance to be transmitted; therefore the velocity varies with the length of the journey.

An appeal to the philologists has been made by scientific men for a word synonymous with "man of science," and free from the objections brought against "that barbaric American trisyllable, '*scientist.*'" The word "scient" has been suggested, meeting with some approval, and has thus been defined by Mr. A. J. Ellis, in the *Academy*: "A 'scient' would not mean one who possesses 'knowledge in general' so much as one who rejects all but knowledge for the foundation of hypotheses, and therefore constructs only with such materials as he knows. A scientist would then be an adherent to scients."

Whatever may be said for the word in itself, with this definition it will hardly be satisfactory, since it excludes almost the entire class to whom it is desired to apply it. "To prolong the vision beyond the boundary of the experimental evidence" would be an impossibility for Mr. Ellis' *scient.*

Recent experiments on the respiration of plants quite overthrow the apparently philosophic and well-established theory which holds that the respiration of plants decomposes the carbonic acid produced by the respiration of animals, thus preserving the normal constitution of the atmosphere.

These experiments recently stated to the Lille Society of Sciences by M. Corenwinder establish the fact that plants and animals respire in the same way, what has been considered the diurnal or principal respiration consisting of the absorption of oxygen and exhalation of carbonic acid, being only an assimilation or di-

gestion of carbonaceous matter by the chlorophyll or green portion of the plant. The act of respiration is performed by means of the nitrogenous portions and continues uninterruptedly during the life of the plant, being masked at times by the increased assimilation of carbon by the chlorophyll, but in reality never ceasing, and like the respiration of animals consisting in the absorption of oxygen and exhalation of carbonic acid.

The German astronomer Vogel proposes a new classification of stars made on the principle that, in general, the phase of development of the star is mirrored in its spectrum. According to this view there are the following classes of fixed stars:

1st. Stars whose state of glow is so intense that the metallic vapor contained in their atmospheres can exert only a very little absorption, so that either no lines or extremely fine ones are perceptible in the spectrum. To this class belong white stars.

2d. Stars in which, as in our sun, the metals contained in the surrounding atmosphere announce their presence by strong absorption lines. Here yellow stars are classed.

3d. Stars whose glow heat has so far diminished that there may occur associations of matters contained in the atmosphere, which, as recent researches have shown, are always characterized by more or less broad absorption bands. In this class red stars are included.

The spectra of fixed stars are also classified according to the intensity of the metallic lines.

PENIKESE.

At a meeting of the Association for the advancement of Science, Professor Putnam gave a very interesting account of the work done in this school. Following out Agassiz's idea, text books are avoided, and every effort is made to compel the students to original investigation. Each one receives a fish with directions to study it externally for two days and tell the instructor what has been observed. Then its anatomy is investigated in the same way, until finally two things have been gained—the habit of self-study has been formed and a thorough knowledge of a vertebrate animal, formed on observation, has been obtained. One little fact was developed in this way in regard to the much mooted " co-education of the sexes." It was found that ladies are quite capable of making original investigations, and four or five of them actually did make original observations before any of the gentlemen began to do so. The students were mostly teachers, and numbered twenty-two gentlemen and twenty-one gentleladies—forty-three in all.—"*Scientific Miscellany,*" *in The Galaxy for November.*

Sir Charles Lyell is seventy-five years old. He graduated at Oxford, and commenced studying law, which he soon forsook for geology.

Mr. Goldwin Smith believes the whole human race is destined to embrace vegetarianism.

Educational Intelligence.

We desire to give, as fully as our space will allow, the latest educational news, and hope our friends will afford us the necessary information. Notice of the time and place of all meetings of an educational character, together with changes of school officers, etc., etc., will be gladly received.

——Delphi Schools enroll five hundred pupils. D. D. Blakeman, Superintendent.

——R. P. Hooker has resigned the Superintendency of Vanderburgh County, to take the place of A. J. McCutcheon (resigned), as Principal of the Canal St. School, Evansville. Frank P. Conn is his successor.

——We call the attention of readers to the advertisement of Hunter's Historic Cards. They rank among the best means of combining amusement and instruction, and serve to render attractive a subject which is too often prosy and uninteresting.

——The Perry County Institute was in session at Cannelton October 5th to 10th, with an enrollment of 77 and an average attendance of 65. Cost of Institute $121.00. Prof. J. C. Riege, of Cincinnati, principal instructor, assisted by Supt. and County teacher. Theo. Courcier is County Superintendent.

——We have received neatly printed copies of the Course of Study sanctioned by the County Boards of Education in Fountain, Johnson and Bartholomew counties. This movement is in the right direction. With Superintendents who are alive, and cordially supported by their teachers, the thorough grading and classification of the District School is only a question of time.

——The Bishop of Manchester recently distinguished between a perfectly instructed and a perfectly educated person. He said:

"When a man goes out into the world knowing when he does know a thing, knowing when he does not know a thing, and knowing how knowledge is to be acquired, I shall call him a perfectly educated man."

This is a definition that will bear thinking about.

——In the October issue we presented the report of Supt. Goodwin, of Clark Co., as to the working of the County Superintendent law. We have received the following additional figures:

AMOUNTS PAID IN BY MAGISTRATES.

1869	$170 05	1873	$489 45
1870	177 15	1874	499 85
1871	144 12		
1872	362 20	Yearly average	$494 65
Yearly average	$213 88		

These figures speak for themselves.

——Below is the report of the South Bend Schools for the month of October:

Number pupils enrolled, 1,361; Average number belonging, 1,246.92; Average daily attendance, 1,154.55 Per cent. of attendance, 92.6; Number of cases of truancy, 5; Number of cases of tardiness, 502; Number neither tardy nor absent, 233; Number visitors, 159.

Prize chromos have been offered to stimulate attendance and punctuality with good results. D. A. Ewing is Superintendent.

COLLEGIATE AND HIGH SCHOOL SECTION OF THE STATE TEACHERS' ASSOCIATION.

PROGRAMME.

INDIANAPOLIS, *Wednesday, Dec.* 30.

2 P. M.—Address by President A. O. Burgess, of N. W. C. University. Subject, College Culture and Discipline.

Discussion of matter of address.

3:30 P. M.—True Position of the Physical Sciences in High Schools and Colleges—paper by Prof. H. W. Wiley, of Purdue University.

Discussion of paper and subject.

MISCELLANEOUS BUSINESS.

Thursday, 31.

9 A. M.—Opening exercises.

9:15 A. M.—Elective Courses of Studies—paper by Prof. Richard Owen, of the State University.

Discussion of paper and subject.

10:40 A. M.—The Demand for Reform in English Orthography.

Discussion.

12 M.—Adjournment.

2 P. M.—Reading of volunteer papers.

Discussion of same.

Election of officers.

REMARKS.

We call the attention of the Association to the new department—Volunteer Papers—and solicit members and others to contribute to the same. Papers may be sent to the chairman of the executive committee. Prof. Harris, of St. Louis, and Prof. Richards, of Washington, D. C. have been solicited to furnish papers on specialties.

The following subjects are submitted for discussion in papers:

1. The Demand for a National University.

2. *Resolved*, That Indiana should, at an early day, inaugurate a system of compulsory education.

3. The Demand for an Educational Qualification in Suffrage.

4. *Resolved*, That there should be uniformity in pronunciation of Latin in the Public Schools and Colleges throughout the state.

5. What is the next step in college work? We earnestly invite college presidents and professors, and teachers in High Schools to attend this meeting. The charge has been made, and we fear too justly, that college men do not engage in educational meetings with a zeal equal that of the Public School teachers. This ought not to be. The colleges claim leadership by virtue of position, let this claim be indicated by works.

Come and let us reason together. For information concerning hotel and railroad rates, see announcement in programme of general association.

GEORGE W. HOSS, Chairman Executive Committee.

Our Book Table.

THE GALAXY presents the following table of contents for November:

1, Leah: a Woman of Fashion; 2, My Captive; 3, Dean Stanley and the English Established Church; 4, Salmon Fishing in Canada; 5, Rhyme and Reason; 6, From the Greek of Plato; 7, A Wheel that starts itself and never stops; 8, The Acorn; 9, With Acid and Needle; 10, Tolerably Scientific; 11, Counsel—in the South; 12, The Foundlings of Paris; 13, Two Babies; 14, The Jewish Dietary System; 15, Substance or Shadow?; 16, The Musical Monster 17, Drift-wood; 18, Scientific Miscellany; 19, Current Literature; 20, Nebulæ.

MANUAL OF THE CONSTITUTION OF THE UNITED STATES, by Israel Wood Andrew. Cincinnati: Wilson, Hinkle & Co.

This is a book of about four hundred pages, embracing the usual topics found in books on this subject. We have examined the book with much care, and can say without hesitation that it is one of the very best books on this subject now before the public. Ordinarily we prefer to give reasons for our convictions, but to do so in this case would require more space than we can spare. Dr. Andrews, the author, is now and has been for many years President of Marietta College, Ohio, and is a very competent man for the preparation of such a book.

PECK'S PRACTICAL CALCULUS. New York: A. S. Barnes & Co.

One of the present characteristics of the educational world is a demand for text-books that are brief, concise, and as much as practicable free from long, tedious demonstrations, and yet replete with principles and processes selected with especial reference to their useful applications. Peck's Practical Calculus, a small book of two hundred pages, seems well calculated to fulfill these conditions. A cursory examination of it shows that the principles of the calculus have been developed according to the method of Leibnitz, which is readily grasped by the average student; and its application to numerous problems in mechanics and physics, by whose easy solution the student can discover its efficiency as a powerful means of investigation, is especially valuable.

HOOKER'S NEW PHYSIOLOGY. New York: Sheldon & Co.

The new is certainly a great improvement on the old. The binding is very attractive, and general typographical appearance very fine. The chapter on the nervous system, though brief, is fully up to the modern standard. This is the case in the ordinary text-book. We notice a claim by the authors in the preface that technical terms have, as far as possible, been avoided. We were therefore hardly prepared for the following, found in the first paragraph: "The plant enlarges by particles, which are introduced into passages and interstices. It grows by *absorption* or by *intussusception*." Altogether we think the book will prove an excellent one for the students of physiology.

Prof. J. A. Sewell, of the Illinois Normal University, is associated with Mr. Hooker in the review. Few men in the west are so competent as Prof. S. to do a work of this kind.

THE POPULAR SCIENCE MONTHLY; established May, 1872. Conducted by Prof. E. L. Youmans.

The Popular Science Monthly is published in a large octavo, handsomely printed on clear type, and, when the subjects admit, fully illustrated. Each number contains one hundred and twenty-eight pages. Terms: $5 per annum, or fifty cents per number.

Now ready, Vols. I, II, III, IV, and V, of the Popular Science Monthly, embracing the numbers from 1 to 30, (May, 1872, to October, 1874). Per Vol. cloth, $3.50; half Morocco, $6.50. These volumes contain articles covering the whole range of Natural Science, and we think no teacher's library can now be complete without them. A new volume of the Popular Science begins with the numbers for May and November each year. Subscriptions may commence from any date. Back numbers supplied. Address D. Appleton & Co., publishers, 549 and 551 Broadway, New York.

SWINTON'S LANGUAGE SERIES. This series consists of four books: 1. Swinton's Language Primer; 2. Language Lessons; 3. School Composition; 4. Progressive Grammar.

We have said more than once that we consider this series one of the best expressions we have yet seen of the best thought of the present time in regard to the teaching of the English Language.

We have given more attention to the last three books.

The *Language Lessons* is a book of exercises, in which an attempt is made to bring the subject of language home to children at the age when knowledge is acquired in an objective way, by practice and habit, rather than by the study of rules and definitions. These exercises are numerous and are so graduated that from the first they tend toward the work of composition, which should be the immediate object of all grammar teaching in the common schools. It is a book through which pupils can be taken page by page, and when they have mastered the book they will have a reasonable mastery of the English language.

The *School Composition* is strictly a manual for school-work, the underlying thought of which is training in the art of expression. It is divided into five parts:

PART 1.—The pupil is here initiated into the construction and combination of sentences.

PART 2.—In this it is sought to extend his resources of expression by accustoming him to vary both the structure and the phraseology of sentences.

PART 3 is an application of the principles already learned to easy composition exercises from outlines.

In PART 4 is presented as much as can advantageously be taught to boys and girls respecting style.

PART 5 deals with the composition of essays, etc., on models adapted to the capacity of young folks.

There is no attempt made to teach theory of style or criticism other than what would be obtained in a fair mastery of writing good English for the ordinary uses of life.

The fourth book in the series treats of Etymology, Syntax, Analyzation, Construction and English Composition, omitting Orthography and Prosody. These subjects are fully and ably presented, and there is a freshness and novelty in the treatment of them that is very attractive.

The entire series commends itself to us especially for the reason that a thorough mastery of the matter as laid down in each book will give a fair practical knowledge of the correct use of the English language. A teacher, therefore, has only to teach this book thoroughly to secure good results.

BOOKS RECEIVED.

SECOND BOOK OF BOTANY, by Eliza A. Youmans. New York: D. Appleton & Co.

THE ELEMENTS OF PHYSICS, by Sidney A. Norton, A. M. Cincinnati: Wilson, Hinkle & Co.

A TREATISE ON PHYSIOLOGY AND HYGIENE, by Joseph C. Hutchinson, M. D. New York: Clark & Waynard.

THE PARENTS' MANUAL; OR HOME AND SCHOOL TRAINING, by Hiram Orcutt, A. M. Boston: Thompson, Brown & Co.

A PROGRESSIVE GRAMMAR OF THE ENGLISH TONGUE, by Prof. Willian Swinton, A. M. New York: Harper & Brothers.

A GRAMMAR SCHOOL HISTORY OF THE UNITED STATES—INDIANA EDITION, by John J. Anderson, A. M. New York: Clark & Maynard.

INTRODUCTION TO ALGEBRA, by Edward Olney, Prof. Math, in University of Mirhigan. Published by Sheldon & Co., 677 Broadway, New York.

SHAW'S NEW HISTORY OF ENGLISH AND AMERICAN LITERATURE, by Truman J. Backus. Published by Sheldon & Co., No. 677 Broadway, New York.

THE ELEMENTS OF PHYSIOLOGY AND HYGIENE, by Thos. H. Huxley, L. L. D., F. R. S., and Wm. Jay Youmans, M. D. New York: D. Appleton & Co.

A MANUAL OF METALLURGY, Vol. I., Fuel, Iron, Steel, Tin, Bismuth, Antimony, Arsenic and Platinum, by William Henry Greenwood, F. C. S. New York: G. P. Putnam's Sons.

Special Announcements.

We will furnish the following journals with the Educationist at the annexed prices:

NAME OF MAGAZINE.	REGULAR PRICE.	PRICE WITH EDUCATIONIST.
Appleton's Journal,	$4 00	$4 00
New York Medical Journal,	4 00	4 00
Popular Science Monthly,	4 00	4 75
The Galaxy,	4 00	4 00
The Literary World,	1 50	2 00
Phrenological Journal,		3 00
New York Weekly Tribune,		2 25
Peterson's Magazine,	2 00	2 25
Scribner's Monthly,	4 00	4 00
St. Nicholas,	3 00	3 25

Agents Wanted!—For the Educationist in every city, town and school district. Liberal terms to active agents! Send for premium list, terms and specimen copies, to the editors, Shortridge & Brown, Indianapolis, Ind

A beautiful and correct photograph of Louis Agassiz will be presented to every old subscriber to the Educationist who will send us the name of a new subscriber, with the money ($1); or who will renew his own subscription for two years.

Send in your orders immediately! Subscriptions can commence at any time, except the April and May numbers of 1873 (Nos. 1 and 2 of Vol. I).

The Educationist, and any one of the following-named periodicals will be sent *one year*, for $1.75:

1. The National Teacher, or Ohio Educational Monthly, Columbus, Ohio. E. E. White, Editor.
2. The National Normal, Cincinnati, Ohio. R. H. Holbrook, Editor.
3. Illinois Schoolmaster, Normal, Ill. Aaron Gove and E. C. Hewett, Editors.
4. Chicago Teacher, Chicago, J. Mahony, Editor.
5. Northern Indiana Teacher, South Bend, Ind. H. A. Ford, Editor.

The Indiana School Journal, with the Educationist, $2.

This arrangement is made to accommodate a large number of our most active teachers who desire to read more than one educational journal. All orders should be sent to the Editors of the Educationist.

Rosencranz's "Science of Education, or Pedagogics as a System," sent for a club of four, or for sale at $1 50

Address, Editors Educationist, Indianapolis, Ind.

Every school room should have the Educationist School Mottoes. Twelve cards in a set. Sent post-paid by the Editors of the Educationist upon receipt of 85 cents. The following are the mottoes:

"Who does the best he can, does well."
"Better be alone than in bad company."
"Be slow to promise, quick to perform!"
"Think, speak and act the truth!"
"The truly good are the truly happy!"
"As we sow so shall we reap!"
"He liveth long who liveth well!"
"Always ready!"
"I will never be late!"
"By perseverance we overcome difficulties!"
Strive to please!"
"Learn to wait!"
'Dare to do right!"
"I can, if I will!"
"A fault confessed is half mended!"

These mottoes are a great hit, and any one who once gets them would not be without them.

A very rapid, safe and easy way to make money, is to procure territory to introduce the latest useful invention that is wanted every day, by every one, everywhere, who has a family, a full sized Sewing Machine with Table and Treadle for only $10, that does the same work as a Machine you would pay $80 for, rapid, smooth and firm, make a seam so strong the cloth will tear before the stitches rip apart. Eight new attachments for all work and the improved Button Hole Worker used by us only. Agents only need show them in operation to sell in every house they enter. Thirty dollars and upwards cleared daily by smart agents. No such Machine was ever offered at any such price. Thirty-five thousand sold last year. One hundred thousand families use them. Demand increasing every day where they become known. Ministers, Judges, Lawyers, Editors, Machinists, Tailors, &c., recommend them as perfect. Rights given free to first applicants. If there is no agency in your place, write for it, or buy a Machine for your family or a relation; there is none better or so cheap. Machines sent to all parts of the country on receipt of price, $10. Read advertisement beginning "$60 saved in every family," in another part of this paper. Address the Proprietors, Robert J. Mülligan & Co., 336 Canalstreet, New York.

HELPS TO HISTORY,

OR

HISTORIC GAMES WITH CARDS,

On the History of the United States.

FOURTH EDITION.

BY D. ECKLEY HUNTER.

☞ While these Cards are intensely interesting and instructive, they are free from the effects of ordinary gaming cards. Parents and children are alike interested in them, and often play together to the advantage of both.

Twenty Games. Not Hard to Learn. They Teach the Dates, Localize Events and Systematize History.

☞ *What those who have used them say:*

"That is what I call *profitable amusement.*"
"I never before could remember dates."
"They act like a charm with my history class."
"They reduce history to system."
"I use them in my history class with good results."
"They enabled me to get 100 per cent; in histofy when I was examined."
"I can't afford to be without them while I teach history."

☞ They have been favorably noticed by the Pennsylvania School Journal, N. Y. Educational Journal, Michigan Teacher, Indiana School Journal, Kansas School Journal, National Normal, National Teacher, and many others.

Where Can They be Had!

☞ A box containing a full set (80) of the Cards, with directions for playing all the games, will be sent by mail for **75 cents.**

Address, **D. ECKLEY HUNTER,**
Bloomington, Monroe Co., Indiana

Webster's Unabridged

FOR TEN DOLLARS!

I have a few copies of WEBSTER'S UNABRIDGED DICTIONARIES, new edition, leather binding, which I will sell at TEN DOLLARS each. Regular price, Twelve Dollars.

Send money by draft or post-office order to
J. B. JOHNSON,
Office of Public Schools, Indianapolis, Ind.

Worcester's Unabridged

FOR SEVEN-FIFTY.

I will sell Worcester's Royal Quarto Dictionary to Teachers at Seven and a Half Dollars. Regular price Ten Dollars

Send money by Draft or Post Office Order, to

R. W. PUTNAM,
113 State Street, Chicago.

TEN DOLLARS. TEN DOLLARS.

$60 SAVED IN EVERY FAMILY.

Male and Female Agents clear $30 per day easy. Outfits and county rights granted free.

Wonderful Achievement.
New Invention. Latest Style.

LARGE SIZE
Family

SEWING MACHINE,

With TABLE and TREADLE COMPLETE.

ONLY TEN DOLLARS.

The successful invention, and production of the ONLY FULL SIZED really good Sewing Machine for less than $50, that operates by

Foot Power.

PRIZE MEDALS, PREMIUMS, DIPLOMAS, AWARDS OF MERIT, HONORABLE MENTION, &c., &c.,

Over all Others.

The last useful invention to render the difficulties of sewing less laborious.

The new and improved patented

Button Hole Worker,

the culmination of perfect mechanical accuracy, practical skill and utility, with beauty, strength and durability combined. A ong required Labor Saver.

8 New Patented Sewing Machine ATTACHMENTS,

with which over seventeen DIFFERENT KINDS of beautiful sewings, FANCY, ELABORATE, ORNAMENTAL, INTRICATE, FINE, PLAIN and STRONG, can be done with perfect ease and rapidity by THOSE WHO NEVER SAW a sewing machine before. OUR NEW ATTACHMENTS have genuine MERIT that command immediate sales. They are the most valuable adjuncts ever patented to advance the usefulness of Sewing Machines, and are adjustable to ALL OTHER good machines, equally as well as our own. Without them no machine can be perfect. SOLD SEPARATE IF DESIRED, at one-tenth the cost of the old styles used by all other machines.

Our New Machine

is larger than some of the $80 machines. Will do every description of sewing, HEM, FELL, TUCK, SEAM, QUILT, BRAID, CORD, BIND GATHER, RUFFLE, SHIRR, PLEATE, FOLD, SCOLLOP, ROLL, EMBROIDER, RUN UP BREADTHS, &c., &c. Will SEW ANYTHING A NEEDLE WILL GO THROUGH. MAKES THE STRONGEST STITCH KNOWN, SO STRONG that the CLOTH WILL TEAR before the seam will rip apart. Has self-adjusting straight needle, reliable, accurate feed, direct motion, no complication of useless cogs or cams to oil or get out of order, is silent, easy working, light running, very rapid, smooth and correct, quickly understood and easily managed.

* The inventors of those excellent machines can be relied upon as upright and responsible men, well worthy of the confidence and patronage of our Christian readers.—"Northern Church Standard," N. Y., Dec. 27th.

Orders Received,

and machines promptly forwarded to any address on receipt of the following cash prices:

SINGLE MACHINES, for samples or private use, plain styles, with ⅝ adjustable extension TABLE and TREADLE, furnished with equipments ready for immediate use	$10 Each.
MACHINES with EXTRA FINE Table	15 "
MACHINES with Table and COVER	20 "
MACHIN with enclosed Table HALF CABINET STYLE	30 "
MACH S with enclosed Table FULL CABINET STYLE	40 "

machines at $10 are precisely the same as those of a higher pr.ce, the only difference being that those at $10 have plain but neat Table and Treadle, while those of a higher price are ornamental, with elaborate and costly polished black walnut.

Tables with covers, enclosed cases, and cabinet style.

NO EXTRA CHARGES made for packing or shipping to ANY PART OF THE COUNTRY. SPECIAL CERTIFICATE for FIVE YEARS with every machine. Specimens of SEWING, ILLUSTRATED CIRCULARS, with numerous recommendations, wholesale cash prices, EXTRAORDINARY INDUCEMENTS to agents, &c., mailed free. Exclusive control of TERRITORY given gratis to capable and energetic agents, merchants, store keepers, &c., who will travel or open agencies and exhibit the wonderful MERITS of our machines in their localities, and solicit orders.

OUTFITS and COUNTY RIGHTS given FREE OF CHARGE.

* An unequaled, quick and HONEST money-making business for male and female canvassers in all parts of the country.—Christian Index, N. Y., Jan. 5th.

Cash Remittances

must be made in Post Office Money Orders, or Bank Drafts made payable to our order in New York. Registered Letters or by EXPRESS at our risk.

All Orders and Communications must be addressed to

ROBERT J. MULLIGAN & CO.,
336 Canal Street, N. Y.

General Manufacturers of Machinery.

TEN DOLLARS. TEN DOLLARS.

TENDOLLARSTENDOLLARSTENDOLLARST